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MEMORANDUM

TO: Water Resources Commission

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SUBJECT: Agenda Item C, February 21, 2019
Water Resources Commission Meeting

Klamath Basin Update

I. Introduction

The Klamath Basin has long been an area with complex and challenging water issues. This report will update the Water Resources Commission on items relating to water management in the basin, with an emphasis on providing context for the Water Resources Department's proposed approach concerning the regulation of groundwater rights to protect senior surface water rights. This report is for informational purposes only.

II. Background

Like many arid areas in the Western United States, the needs for water in the Klamath Basin often exceed the available resources to meet them on a year-to-year basis. Considerable time and effort has been made over the years to address water needs and water management issues within the basin among irrigators, local governments, local communities, tribal, state and federal interests. These efforts over the years have involved work on the pending adjudication, settlement negotiations, litigation, basin studies and water measurement, monitoring and distribution to protect senior water rights.

The Klamath Basin is fully appropriated during all months, requiring extensive water use regulation, and leading to conflict between instream and out-of-stream uses. This difficult situation is made worse during times of drought, which the basin has experienced six of the past nine years. The Klamath Basin has and will continue to be an area of significant focus for the Department for the foreseeable future.

In recent years, there has been considerable controversy concerning the regulation of groundwater rights that the Department has determined to have the potential for substantial interference with senior surface water rights. This has resulted in numerous lawsuits challenging the Department's regulation actions. This report provides background on this issue and describes a proposed effort to more fully engage Klamath water users in understanding basin hydrology as a basis for developing a long-term approach for conjunctive management of surface and groundwater rights in the area.

III. Discussion

Hydrologic Understanding of the Klamath River Basin, Oregon

U.S. Geological Survey (USGS) and Department investigations have found significant hydraulic connection between groundwater and surface water in the Klamath Basin. In response to increased groundwater pumping in the Upper Klamath Basin in the 1990s and 2000s, the USGS in cooperation with the Department began a comprehensive study and analyses of the basin hydrogeology. This project built on and incorporated existing, published reports as well as unpublished data and analyses pertaining to the geology, hydrology, and hydrogeology in the basin.

USGS Scientific Investigations Report (SIR) 2007-5050¹, USGS SIR 2012-5062², and the references cited therein, represent the best available information on the hydrogeology of the Upper Klamath Basin and form the basis for the Department's conceptual framework of the groundwater system and groundwater-surface water interaction in the basin. These two reports were peer reviewed following the fundamental scientific practices of the USGS³. Table 1 provides a summary of the foundation and results of those two investigative studies. A narrative description of the geology and hydrogeology of the Klamath Basin is included in Attachment 1.

¹ Gannett, M.W., Lite, K.E. Jr., La Marche, J.L., Fisher, B.J., and Polette, D.J., 2007, Ground-water hydrology of the upper Klamath Basin, Oregon and California: U.S. Geological Survey Scientific Investigations Report 2007-5050, 84 p. Online at <https://pubs.er.usgs.gov/publication/sir20075050>

² Gannett, M.W., Wagner, B.J., and Lite, K.E., Jr., 2012, Groundwater simulation and management models for the upper Klamath Basin, Oregon and California: U.S. Geological Survey Scientific Investigations Report 2012-5062, 92 p. Online at <https://pubs.er.usgs.gov/publication/sir20125062>

³ U.S. Geological Survey Manual Chapter 502.3, Fundamental Scientific Practices: Peer Review. Promulgated 11/03/2016 by Jose R Aragon, Associate Director for Administration. Online at: <https://www2.usgs.gov/usgs-manual/500/502-3.html>

Table 1. Summary of USGS SIR 2007-5050 and 2012-5062

Report Title	Foundational Inputs	Key Conclusions	Level of review
USGS SIR 2007-5050 – Groundwater hydrology of the upper Klamath Basin, Oregon and California	<ul style="list-style-type: none"> • Geologic maps • Geochemistry data • Field reconnaissance • Data from over 1,000 well logs in the basin • Over 80 references from published and unpublished reports 	<ul style="list-style-type: none"> • 1.8 million acre-feet of groundwater are discharged annually to surface water • At least 60% of the total inflow to Upper Klamath Lake can be attributed directly to groundwater discharge 	Peer Reviewed According to USGS Standards
USGS SIR 2012-5062 - Groundwater simulation and management models for the upper Klamath Basin, Oregon and California	<ul style="list-style-type: none"> • Information from USGS SIR 2007-505 • Updated geologic data • Calibrated to groundwater level data from over 500 individual wells and estimates of groundwater discharge to streams at over 50 locations 	<ul style="list-style-type: none"> • Simulated hydrologic responses to pumping wells • Estimated significant impacts to surface water (stream depletion) in all documented simulations 	Peer Reviewed According to USGS Standards

Background on Surface Water-Groundwater Regulation in the Klamath Basin

The Klamath Basin Adjudication began in 1975. In 2013, the Department issued its Findings of Fact and Final Order of Determination and referred the case to the Klamath County Circuit Court. Once the administrative phase of the adjudication was completed, the statutes require the Department to manage the basin according to the doctrine of prior appropriation while the adjudication proceeds through the Klamath County Circuit Court. Regulation of surface water rights and determined claims began in 2013.

Subsequent conflict due to insufficient water to satisfy all needs resulted in negotiations in the off-project area of the basin, concluding in an agreement in early 2014. The 2014 Upper Klamath Basin Comprehensive Agreement (UKBCA) sought to: (i) support the economic development interests of the Klamath Tribes; (ii) provide a stable, sustainable basis for the continuation of agriculture in the Upper Klamath Basin; (iii) manage and restore riparian corridors along streams that flow into Upper Klamath Lake in order to achieve proper functioning conditions permanently; and (iv) resolve controversies regarding certain water right claims and contests in the Oregon Klamath Basin Adjudication.

In early 2015, the Commission adopted OAR Chapter 690, Division 025 rules which addressed regulation of wells in the off-project area of the Upper Klamath Basin based on provisions in the UKBCA. Division 025 included a provision that the rules would no longer apply if the UKBCA was terminated, and that groundwater regulation would occur under statewide rules (OAR Chapter 690, Division 009).

Wells were regulated under the Division 025 rules for three irrigation seasons, 2015-2017. The regulation affected 50 wells. Six lawsuits were filed in response to the regulation during that period. In 2017, consolidated cases for several landowners went to trial in Marion County Circuit Court where the Department prevailed. The landowners appealed and the case is currently awaiting a ruling from the Oregon Court of Appeals. On December 28, 2017, the Secretary of the Interior published a "Negative Notice" terminating the UKBCA, finding that all of its conditions could not be achieved. Upon termination of the UKBCA, the Division 025 rules were no longer in effect. Regulation of wells during 2018 occurred under the Division 009 rules, which apply to surface water-groundwater regulation statewide. More wells (140) are regulated under the Division 009 rules than had been regulated under the Division 025 rules. Fourteen lawsuits were filed in 2018 in response to regulation of groundwater rights in 2018.

Proposed Path Forward

This winter, the Department is proposing a two-step process that is intended to improve the public's understanding of basin hydrology and result in a long-term management approach for surface water-groundwater management in the Klamath basin. The first step is to consider the adoption of interim rules relating to the regulation of wells for the 2019 and 2020 irrigation seasons in the Upper Klamath Basin. This is proposed to be accomplished by modifying the Division 025 rules. The amended Division 025 rules are expected to result in about seven wells being subject to regulation (compared to the 140 wells subject to regulation under Division 009). The Commission will consider adopting these rules at a special teleconference meeting scheduled for April 12, 2019.

The interim rules, if approved by the Commission, would control how groundwater regulation occurs in the Upper Klamath Basin, beginning in April 2019, and remaining in effect through March 2021. The second step, which would begin in the Summer of 2019, will include public meetings and open house events to discuss and accept public input on surface water and groundwater management options in the Klamath Basin. Following this public outreach, the Department would develop proposed permanent rules specific to surface and groundwater management in the Klamath Basin. The Klamath Tribes, water users, conservation groups, and local governments will be asked to provide assistance and input in the development of the permanent rules. Table 2 lists past regulation approaches and the proposed path forward.

Table 2-Summary of Surface Water-Groundwater Regulation in the Upper Klamath Basin, OR

Time Period	Rules under which well regulation occurred	Number of wells subject to regulation	Comments
2015-2017	OAR 690-025	50	These rules were adopted to follow provisions of the Upper Klamath Basin Comprehensive Agreement (UKBCA)
2018	OAR 690-009	140	The UKBCA was terminated by the Federal Secretary of the Interior in December 2017. This resulted in 690-025 rules no longer being in effect, causing the Department to regulate under the statewide 690-009 rules.
2019-2020	Amended OAR 690-025 (proposed)	7	These proposed rules minimize regulation of wells in the Upper Klamath Basin to allow the Department and basin/community interests to work on permanent rules addressing long-term water management and well regulation.
2021-beyond	To be determined	To be determined	The Department will work with basin/community interests to develop permanent rules for water management in the Klamath Basin.

The schedule for the current Division 025 rulemaking process is included in Table 3.

Table 3. Division 025 Rulemaking Timeline

Date	Event	Description
January 2, 2019	Draft rules distributed	Draft rules were provided to Rules Advisory Committee (RAC) for review
January 15, 2019	First RAC meeting	Department solicited feedback on proposed rules and fiscal impact statement
January 28, 2019	Second RAC meeting	Department solicited feedback on proposed rules and fiscal impact statement
February 1-March 4, 2019	Proposed rules posted by Secretary of State	Public comment period on proposed rules
February 21, 2019	Public Hearing on Proposed Rules in Salem, OR	3:30 PM Chair Reeves is the hearings officer
February 26, 2019	Public Hearing on Proposed Rules in Klamath Falls, OR	1:00 PM to 3:00 PM Ivan Gall is the hearings officer
April 12, 2019	Special Teleconference Meeting of Water Resources Commission	The Commission will consider adopting new Division 025 rules.

IV. Conclusion

Department staff will complete a review of all comments submitted during the public comment period for the proposed amendments to the Division 025 rules. At that time, the Department will bring to the Commission for consideration either adoption of the proposed Division 025 rules, or continuation of Division 009 state-wide rules. This discussion and possible rule adoption will be held at a special Commission meeting on April 12, 2019.

Attachments:

1. Summary of Geology and Hydrogeology of Klamath Basin
2. Ongoing Federal Water Management Efforts in Basin

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Summary of Geology and Hydrogeology of Klamath Basin

The Klamath Basin is largely characterized by a number of broad, northwest trending valleys bounded by a series of normal faults. The main production aquifers of the region are found in relatively thick, interbedded sedimentary and volcanic deposits within these valleys. Younger volcanic deposits forming the uplands bordering the valleys readily accept recharge and transmit groundwater toward valley bottoms. Older volcanic deposits, commonly buried beneath thick sedimentary units in the valleys, form high-production aquifers that support irrigated agriculture in the region. In many places the valley-filling sedimentary deposits confine the underlying volcanic aquifers creating artesian conditions. Confinement of the lower volcanic aquifers and hydraulic connection to higher elevation recharge areas commonly produces pressures sufficient to support flowing artesian wells in valley bottoms, particularly in the Sprague River and Wood River sub-basins.

The pressure in these aquifers creates an upward vertical hydraulic gradient beneath the valley floors that drives groundwater up through the sedimentary units to the surface where it discharges as either diffuse seepage or, where vertical faults or fractures are prevalent, through discrete spring complexes (e.g., Spring Creek, Bonanza Big Springs, Wood River Springs, Kamkaun Spring, and many relatively small unnamed springs). The larger springs contribute substantial amounts of water to streamflow throughout the year and provide surface water flows throughout late summer and fall in the absence of year-round snowpack or surface water reservoirs.

Productive volcanic aquifers exist at various depths throughout much of the basin and are generally confined with water levels rising to near or above land surface. It is a common misconception that confined aquifers are hydraulically isolated from springs and surface water⁴In places where these aquifers are overlain by fine-grained alluvial sediments, the connection to surface water in the immediate vicinity of a well is generally through diffuse seepage upwards through the overlying sediments. However, the high transmissivity and low storage coefficient of the confined aquifers rapidly conveys pumping impacts laterally through the aquifer and the presence and abundance of faulting allows for rapid transmission of that impact vertically to the surface via depletion to springs. The complexity of layered aquifers breached by faulting in the Upper Klamath Basin adds uncertainty in determining exactly how and where a single well's pumping will impact surface water. The abundance of faulting and high-volume springs and spring complexes, and the estimate of 1.8 million acre feet per year of groundwater discharge to surface water, indicate efficient hydraulic connection between the aquifers of the Upper Klamath Basin and surface water^{1,2} (of staff report).

⁴ Barlow, P.M., and Leake, S.A., 2012. Streamflow depletion by wells – Understanding and managing the effects of groundwater pumping on streamflow. U.S. Geological Survey Circular 1376, 84p. <https://pubs.er.usgs.gov/publication/cir1376>

Ongoing Federal Water Management Efforts in Basin

The Klamath River begins in Oregon, flowing south into California and eventually discharges into the Pacific Ocean. Coho salmon on the Klamath River are listed as threatened under the Endangered Species Act (ESA). The shortnose and Lost River suckers reside in Upper Klamath Lake, are of significant importance to the Klamath Tribes, and are also listed under the ESA. The upper Klamath Basin in Oregon and California is a major agricultural production area with 400,000 acres under irrigation, most within the Bureau of Reclamation (BOR), Klamath Project Area. The basin is also home to significant grazing of cattle and three major National Wildlife Refuges.

There are four federally-recognized Tribes which reside in the Klamath Basin: the Hoopa, Karuk and Yurok in California and the Klamath Tribes in Oregon. The Hoopa and Yurok Tribes have Federal Reserved Treaty Rights which include the right to take salmon. The Klamath Tribes also have treaty rights to hunt, fish and gather. In 2016 the Hoopa and Yurok Tribes each filed action against the BOR for violation of the ESA, alleging a take of Coho salmon. The case was heard in the Northern California Federal District Court. The judge ruled in favor of the tribes in 2017 and ordered the BOR to release water from the Klamath Project for dilution and flushing purposes. These releases reduced the amount of water available for irrigation within the Klamath BOR Project.

The current Biological Opinion (BiOp) was adopted in 2013 and is in effect through 2023. The BiOp was developed by the BOR in conjunction with U.S. Fish and Wildlife Service and NOAA Fisheries. The BOR began re-consultation with the other two federal agencies in 2017 to update the BiOp for the Klamath Project. The BOR issued a Biological Assessment document in December 2018. The BOR is projecting that the revised joint BiOp will be issued in April 2019.

While both the KBRA and UKBCA have been terminated, all of the water and fish issues still remain. Several efforts by tribes, water users, the two states and the federal government have attempted to identify the various needs in the basin and find solutions. For various reasons these previous attempts have failed. A new effort is now underway. A special assistant to the Secretary of the Interior has been in the basin with his team nearly every month, meeting with various groups including tribes, project water uses, off-project water users and the two states. The first meeting of all of those willing to take on another attempt at finding solutions was held in December 2018. The schedule is aggressive with monthly meetings scheduled through 2019. The January meeting was cancelled due to the federal budget issues. It is too early to know how long the effort will take or whether a final agreement will result.

